

A NEW SPECIES OF *SILENE* (CARYOPHYLLACEAE) FROM THE
SERPENTINES OF DEL NORTE COUNTY, CALIFORNIA

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ABSTRACT

Silene serpentinicola T. W. Nelson and J. P. Nelson is here described as new, discovered on and endemic to the serpentines of the Smith River basin, within Six Rivers National Forest, Del Norte County, California. The bright carmine-red flowered *S. serpentinicola* has been confused and with the red-scarlet flowered *S. californica* Durand and the pink of *Silene hookeri* Nutt subsp. *pulverulenta* (Peck) Hitchc. & Mag. However, each is distinctive.

Key Words: *Silene*, serpentine, Smith River Basin, Six Rivers National Forest, Del Norte County, California.

Silene serpentinicola T. W. Nelson and J. P. Nelson, sp. nov. (Fig. 1)

A *Silene californica* in caule uno e rhizomate ramificante enascens et caulis secundis interdum in iodem rhizomate brevioribus (4–10 nec 20–50 cm) floribus paucioribus (1–3 vel nec 2–5) floribus bicoloribus unguibus albis vividus puniceus sursum limbis vividis puniceis appendicibus (2.5–4.5 × 0.5–1 mm nec 1–1.5 × 0.5–0.75) truncates (nec fimbriatis) ad apicem divergens.

Perennial; stems from thin branching rhizome system attached to deep tap root, erect, 4–10 (15) cm long, simple, gray-green, canescent, eglandular at base, glandular-pubescent above; cauline leaves of 4–8 pairs, crowded, oblanceolate to obovate, the lowest reduced to lanceolate bracts upward increasing in size, 2.5–4.5 cm long, 0.5–1.5 cm. wide, gray-green, glabrate; inflorescence terminal, 1–3 (4) flowered, densely glandular pubescent; calyx purplish, inflated tubular expanding in fruit, indistinctly 10-nerved, densely glandular pubescent, 13–17 mm long; limb of corolla carmine-red, purple on drying, more or less equally 2-lobed, each lobe with a lateral tooth, claw white with increasing carmine-red veining distally, the limb considerably wider than claw; petaloid appendages 2, prominent, linear, truncated, 2.5–4.5 mm long, 0.5–1.0 mm wide; filaments 17–25 mm long, long exerted; styles 3, 13–17 mm long, long exerted; seeds reniform, dark brown, strongly papillate 1.8–3.0 mm long; hexaploid, $2n = 72$ (Kruckeberg 1960).

Type: USA, CA, Del Norte County, T18N, R1E, Sec. 34, UTMS N 4641021 E 413668, Elev. 589 m (1933 ft), Six Rivers National Forest, Low Divide road 8.85 miles north of junction with North Bank road. Serpentine road cut just South of Low Divide, 20 June 2002, *Thomas W. Nelson & Sydney Carothers* 9175. (HOLOTYPE: HSC; Isotypes: BYU, CAS, OSC, MICH, RM, RSA, UC, US, WTU.

Paratypes: USA, CA, Del Norte County: Flowers

bright red, gravely opens on Red Hill, 13 Jul. 1907, *W.L. Jepson* 2904 (JEPS); Near Gasquet, North side of Middle Fork of Smith River on Old Gasquet Toll Road, 1 Jun. 1935, *Harold E. Parks & Joseph P. Tracy* 11205 (UC); Low Divide East of Smith River Village in chaparral, serpentine, Elev. 549 m (1800 ft), 25 Jun. 1938, *Joseph P. Tracy* 16199 (UC); Humboldt Flat South of Adams Station, serpentine, Elev. 762 m (2500 ft), 26 Jun. 1952, *Philip Munz*, 17790 (RSA); T17N, R2E, Sec. 16, Jct. Stony Creek & North Fork Smith River, 23 May 1972, *Larry De Buhr & Garry Wallace* 617 (RSA); dry rocky bank along Low-High Divide Rd. 7.4 miles from junction with North Bank Road, 13 Jun. 1956, *E. K. Balls & L. W. Lenz*, 21673 (RSA); T17N, R1E, Sec. 25, along French Hill Rd. 0.6 miles from junction with State Route 199, moist serpentine, 14 Jun. 1978, *Thomas Nelson & Jane Nelson*, 4151 (HSC, RSA, WTU); Gasquet Quad, Elev. 419 m (1374 ft) near 18 Mile Creek, 15 Jun. 1988, *Dave Imper* 1422 (HSC); 4 miles south of state route 199 on South Fork Smith River Road, serpentine gravel bank, 27 Jun. 1984, *Dave Imper* s.n. (HSC); near High Divide, serpentine lat. 41°54'42" long. 124°02'55" 14 Jun. 1982, *Dave Imper* 1425 (HSC); T17N, R2E, Sec. 31, off French Hill Road in serpentine openings, 6 Jul. 1983, *Tom Jimerson* s.n. (HSC); along High-Low Divide Road 5.8 miles from junction with North Bank Road, dry serpentine, Elev. 518 m (1700 ft), UTMS N 04113739 E 463743, 18 Jun. 2002, *Thomas Nelson & Sydney Carothers* 9085 (HSC); T18N, R1E, Sec. 34, UTMS N 0413905 E 4640976, Elev. 488 m (1600 ft) along Low Divide Rd. ca. 0.75 miles south of Low Divide, serpentine on road cut, 13

FIG. 1. Illustration of *Silene serpentinicola*. A. Mature plant at anthesis and plant in bud. B. Petal showing appendages. C. Flower in longitudinal section.

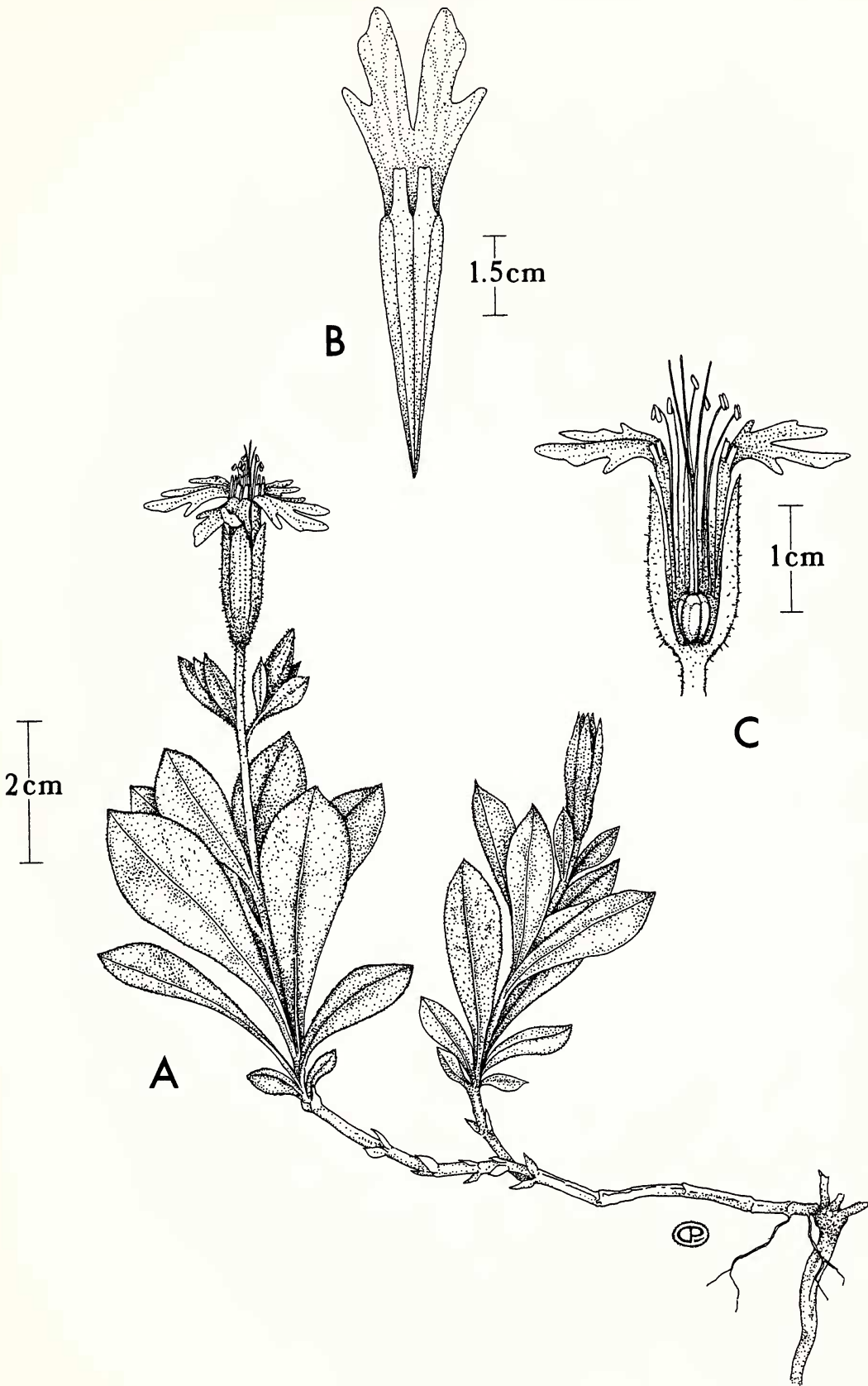


TABLE 1. COMPARISON OF DISTINGUISHING FEATURES OF *SILENE SERPENTINICOLA* WITH *SILENE CALIFORNICA* AND *SILENE HOOKERI* COMPLEX

	<i>S. serpentinicola</i>	<i>S. californica</i>	<i>S. hookeri</i> complex
Habit	One (two) erect stems from thin branching rhizome	Three to five reclining stems from root crown	Three to five reclining stems from root crown
Corolla limb	Carmine-red	Red-scarlet	Pink-white
Corolla claw	White with carmine-red veining above	Red-scarlet	Pink-white
Filaments and styles	Long exerted	Long exerted	Included
Pubescence	Densely glandular	Slightly glandular	Canescent
Petaloid appendages	Truncate 2.5–4.5 mm long × 0.5–1.0 mm wide, prominent	Fimbriate, 1.0–1.5 mm long × 0.5–0.75 mm wide, not prominent	Truncate, 0.8–1.3 mm long × 0.5–0.7 mm wide, not prominent
Habitat	Serpentine endemic	Occasionally found on serpentine	Mostly found on serpentine

Jun 2002, *Thomas Nelson & Sydney Carothers*, 9089 (HSC); T17N, R2E, Sec. 29, along French Hill Rd. 2.4 miles from junction with State Route 199, serpentine, 14 Jun. 1978, *Thomas Nelson & Jane Nelson*, 4164 (HSC); T17N, R2E, Sec. 18, along Forest Service Rd. 305 (Gasquet Mountain Rd.) 2 miles from junction with State Route 199, serpentine, 15 Jun. 1989, *Thomas Nelson & Jane Nelson* 8753 (HSC); T17N, R1E, Sec. 9, Elev. 640 m (2100 ft), along Forest Service Rd. 305, 6 miles north of junction with North Bank Rd., serpentine, 24 May 1987, *Thomas Nelson & Jane Nelson*, 8981 (HSC); T17N, R2E, Sec. 20, Gasquet Rd. (Old Gasquet Toll Rd.), May 29 1947, *Ruby Van Deventer*, s.n., (HSC); T17N, R2E, Sec. 16, Elev. 183 m (600 ft), Stony Creek Bog, Jeffrey Pine & Incense Cedar, 13 May 1973, *James P. Smith*, 6718 (HSC); T17N, R2E, Sec. 21, Elev. 145 m (475 ft), Old Gasquet Toll Rd., disturbed chaparral under power lines 0.2 miles north of southern entrance, 17 Jun. 1976, *Linda Barker*, 1611 (HSC); along road side near meteorological tower, Little Bald Hills, T16N, R1E, Sec. 23. Elev. 549 m (1800 ft), 28 Jun. 1984, *Lois Reed*, s.n. (Redwood National Park Herbarium).

DISTRIBUTION AND HABITAT

Silene serpentinicola is a rare species endemic to serpentes of the Smith River Basin of northwestern Del Norte County, extreme northwestern California. Although we have found no populations in extreme southwestern Oregon, the serpentine sequences of Del Norte County extend into this area.

RELATIONSHIPS

Although *S. serpentinicola* has been confused with *S. californica* and *S. hookeri* subsp. *pulverulenta*, each of the three is distinctive. Table 1 details the important differences. Kruckeberg (1960) determined the chromosome numbers of the three *Silene* species in this paper to be: *S. serpentinicola* 2n = 72 (hexaploid), *S. californica* 2n = 48 (tetraploid), and *S. hookeri* 2n = 72 (hexaploid). Furthermore, artifical crosses between *S. serpentinicola* and *S. hookeri* demonstrated reduced fertility in the F-1 generation and marked infertility in the F-2 generation (Kruckeberg 1961). At least one population is known where the two species are sympatric and no intermediates are present.

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LITERATURE CITED

KRUCKEBERG, A. R. 1960. Chromosome numbers in *Silene* (Caryophyllaceae) II. Madroño 15:205–215.
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